



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/623,095	07/17/2003	Steve McCormack	M065/ 2615CIP	2885

7590 01/25/2006
Joseph A. Sawyer, Jr.
SAWYER LAW GROUP LLP
P.O. Box 51418
Palo Alto, CA 94303

EXAMINER

NGUYEN, CUONG QUANG

ART UNIT PAPER NUMBER

2811

DATE MAILED: 01/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/623,095	Applicant(s) MCCORMACK ET AL.	
	Examiner Cuong Q. Nguyen	Art Unit 2811	

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 5, 7 and 15-26 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1, 5, 7, 15-26 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1, 5, 7, 15, 16, 19, 22, 23 and 24 are rejected under 35 U.S.C. 102(a) as being anticipated by Tsuchiko et al. (US 2003/0038316).

Tsuchiko et al. discloses a LDMOS device comprising: a gate region including a gate (108) and a gate oxide (107); a body region (114) under the gate region; and an enhanced drift region (105) under the gate region, whereby the enhanced drift region overlaps the lateral tail of the body region; a drain region (112) within the enhanced drift region such that the enhanced drift region is under the entire drain region; and a layer (104) under the enhanced drift region and the body region, wherein the layer (104) having the same conductivity type (N-type) as the enhanced drift region. See Fig.4.

Claims 1, 5, 7, 15, 16, 19, 22, 23 and 24 are rejected under 35 U.S.C. 102(a) as being anticipated by Mori (WO 03/021685).

Mori discloses a LDMOS device comprising: a gate region including a gate (30) and a gate oxide (29); a body region (26) under the gate region; and an enhanced drift

Art Unit: 2811

region (27) under the gate region, whereby the enhanced drift region overlaps the lateral tail of the body region; a drain region (28D) within the enhanced drift region such that the enhanced drift region is under the entire drain region; and a layer (104) under the enhanced drift region and the body region, wherein the layer (104) having the same conductivity type (N-type) as the enhanced drift region. See Fig.1.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 5, 7, and 15-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsing et al. (US 5,517,046) in view of Mori (WO 03/021685).

Regarding claims 1, 5, 7, 15, 16, 19, Hsing et al. discloses a LDMOS device comprising: a gate region including a gate (26) and a gate oxide (24); a body region (29) under the gate region; and an enhanced drift region (31) under the gate region; a drain region (34) within the enhanced drift region such that the enhanced drift region is under the entire drain region; and an epitaxial layer (22) under the enhanced drift region and

the body region, wherein the layer (22) having the same conductivity type (N-type) as the enhanced drift region. See Fig.3.

Hsing et al. does not teach that the enhanced drift region overlaps the lateral tail of the body region.

As above discussing, Mori teaches that the enhanced drift region overlaps the lateral tail of the body region.

Regarding claims 18 and 21, as shown in Hsing Fig.3, a buried layer (23) provided under the epitaxial layer (22) and above a substrate (20), the buried layer (23) having the conductivity type of the epitaxial layer (N-type) and a different conductivity type than the substrate (P-type).

It would have been obvious to one of ordinary skill in the art to form the enhanced drift region such as the enhanced drift region overlaps the lateral tail of the body region as taught by Mori into Hsing et al.'s device in order to obtain an offset drain type MOS transistor having a stable threshold voltage and a low ON resistance. See Mori's abstract.

Regarding claims 17 and 20, Hsing et al. further teaches that the conductivity type can be reverse such as the conductivity type of the enhanced drift region and the epitaxial layer can be P-type instead of N-type. See Hsing et al.'s col.2 lines 50-67.

The term "purposely" in claims 1, 5 and 7 does not add any "structure limitation" into claims and is considered as an "intended use limitation". Ex parte Masham, 2

Art Unit: 2811

USPQ2d 1647. Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. In re Danley, 120 USPQ 528, 531 (CCPA 1959). "Apparatus claims cover what a device is, not what a device does." (emphasis in original) Hewlett - Packard Co. v. Bausch & Lomb Inc., 15 USPQ2d 1525, 1528 (Fed. Cir. 1990). In apparatus, article, and composition claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art.

The limitation "wherein the enhanced diff region and the body region are both self-aligned to the gate region and therefore self-aligned to each other" in claims 1 and 5 is taken to be a product by process limitation, it is the patentability of the claimed product and not of recited process steps which must be established. Therefore, when the prior art discloses a product which reasonably appears to be identical with or only slightly different than the product claimed in a product-by process claim, a rejection based on sections 102 or 103 is fair. A product by process claim directed to the product per se, no matter how actually made, In re Hirao, 190 USPQ 15 at 17 (footnote 3). See In re Fessman, 180 USPQ 324,326 (CCPA 1974); In re Marosi et al., 218 USPQ 289,292 (Fed. Cir. 1983); and particularly In re Thorpe, 227 USPQ 964,966 (Fed. Cir. 1985), all of which make it clear that it is the patentability of the final structure of the product "gleaned" from the process steps, which must be determined in a "product by process" claim, and not the patentability of the process. See also MPEP 2113. Moreover, an old or obvious product produced by a new method is not a patentable product, whether claim in "product by process" claim or not.

Conclusion

3. Papers related to this application may be submitted to Technology center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the TC 2800 Fax center located in Crystal Plaza 4, room 4-C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 2811 Fax Center number is (703) 872-9306. The Group 2811 Fax Center is to be used only for papers related to Group 2811 applications.

4. Any inquiry concerning this communication or any earlier communication from the Examiner should be directed to CUONG Q NGUYEN whose telephone number is (571) 272-1661. The Examiner is in the Office generally between the hours of 6:30 AM to 5:00 PM (Eastern Standard Time) Monday through Thursday.

5. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Eddie Lee who can be reached on (571) 272-1732.

6. Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center Receptionists whose telephone number is 308-0956.


Cuong Nguyen

Primary examiner

1/21/06